

REQUEST FOR COPIES OF ABANDONED APPLICATION UNDER 37 CFR 1.14(a)

RECEIVED

DEC 14 1999

File Information Unit

In re Application of

**Application Number**

08/879475

**Filed**

6-20-97

**GROW AN UNR**

711

**Examiner**

Shir

**PAGE No.**

Assistant Commissioner for Patents  
Washington, DC 20231

I hereby request access under 37 CFR 1.14(a)(3)(iv) to the application file record of the above-identified ABANDONED application, which is: (CHECK ONE)

X (A) referred to in United States Patent Number 588 9386, column FACE

(A) referred to in United States Patent No. \_\_\_\_\_  
 (B) referred to in an application that is open to public inspection as set forth in 37 CFR 1.11, i.e.  
 Application No. \_\_\_\_\_ filed \_\_\_\_\_ on page \_\_\_\_\_ of  
 paper number \_\_\_\_\_

paper number \_\_\_\_\_

\_\_\_\_ (C) an application that claims the benefit of the filing date of an application that is open to public inspection, i.e., Application No. \_\_\_\_\_, filed \_\_\_\_\_ of \_\_\_\_\_, 19\_\_\_\_, and the complete

— (D) an application in which the applicant has filed an authorization to lay open the complete application to the public.

Please direct any correspondence concerning this request to the following address:

William Rhodes

**Signature**

Signature William Rhodes

Typed or printed name

12-14-99

Date: \_\_\_\_\_

**FOR FTO USE ONLY**

Approved by:

(Indais)

Unit:



[11] **Patent Number:** **5,889,386**  
[45] **Date of Patent:** **Mar. 30, 1999**

- References Cited**
- U.S. PATENT DOCUMENTS**

- |           |         |                   |
|-----------|---------|-------------------|
| 3,971,980 | 7/1976  | Jungfer et al. .  |
| 4,295,097 | 10/1981 | Thompson et al. . |
| 4,377,787 | 3/1983  | Kikuoka et al. .  |

**Primary Examiner**—Edward H. Tso  
**Assistant Examiner**—K. Shin  
**Attorney, Agent, or Firm**—McAndrews, Held & Malloy,  
Ltd.

[57] **ABSTRACT**

In an exemplary embodiment, a battery conditioning system monitors battery conditioning and includes a memory for storing data based thereon; for example, data may be stored representative of available battery capacity as measured during a deep discharge cycle. With a microprocessor monitoring battery operation of a portable unit, a measure of remaining battery capacity can be calculated and displayed. Where the microprocessor and battery conditioning system memory are permanently secured to the battery so as to receive operating power therefrom during storage and handling, the performance of a given battery in actual use can be accurately judged since the battery system can itself maintain a count of accumulated hours of use and other relevant parameters. In the case of a non-portable conditioning system, two-way communication may be established with a memory associated with the portable unit so that the portable unit can transmit to the conditioning system information concerning battery parameters (e.g. rated battery capacity) and/or battery usage (e.g. numbers of shallow discharge and recharge cycles), and after a conditioning operation, the conditioning system can transmit to the portable unit a measured value of battery capacity, for example.

### Related U.S. Application Data

- [63] Continuation of Ser. No. 879,475, Jun. 20, 1997, which is a continuation of Ser. No. 561,665, Nov. 22, 1995, abandoned, which is a continuation of Ser. No. 134,881, Oct. 12, 1993, Pat. No. 5,508,599, which is a continuation of Ser. No. 769,337, Oct. 1, 1991, Pat. No. 5,278,487, which is a continuation of Ser. No. 544,230, Jun. 19, 1990, abandoned, which is a division of Ser. No. 422,226, Oct. 16, 1989, Pat. No. 4,961,043, which is a division of Ser. No. 168,352, Mar. 15, 1988, Pat. No. 4,885,523, which is a continuation-in-part of Ser. No. 944,503, Dec. 18, 1986, Pat. No. 4,737,702, which is a continuation-in-part of Ser. No. 876,194, Jun. 19, 1986, Pat. No. 4,709,202, which is a division of Ser. No. 797,235, Nov. 12, 1985, Pat. No. 4,716,354, which is a continuation-in-part of Ser. No. 612,588, May 21, 1984, Pat. No. 4,553,081, which is a continuation-in-part of Ser. No. 385,830, Jun. 7, 1982, Pat. No. 4,455,523.
- [51] **Int. Cl.<sup>o</sup>** ..... H02J 7/00
- [52] **U.S. Cl.** ..... 320/136; 320/107; 320/112;  
320/114; 320/134; 320/427; 320/426
- [58] **Field of Search** ..... 320/107, 106,  
320/112, 113, 114, 115, 116, 134, 136;  
324/426-435

**20 Claims, 24 Drawing Sheets**

